Abstract

A non-destructive and non-contact method for measuring stress at the mid-plane of tempered glass plates that uses Bragg scattering from a pair of thermal gratings. The gratings are formed by parallel writing beams of laser light retroreflected through the glass. The polarization state of light from a delayed laser beam that scatters from both these thermal gratings is measured, and the change in polarization of the doubly scattered light with separation between the two gratings is correlated to the in-plane stress. Systems and techniques to take these measurements and control a glass manufacturing process are also disclosed.